



## Teachers of the Year visiting Marshall, Space Camp

by Jonathan Baggs

**T**he nation's top teachers are about to get an idea of what it's like to live and work in space, thanks to NASA. Outstanding educators from the 50 states and beyond are participating in a weeklong series of events this week, including International Space Camp.

At the opening ceremony July 28, original rocket team members Dr. Ernst Stuhlinger, Dr. Gerhard Reisig, Konrad Dannenberg and Werner Dahm participated in a panel discussion of the history of space with an emphasis on Dr. Wehrner von Braun's German team that was brought to America by the U.S. Army after World War II. George Hopson, manager of the Space Shuttle Main Engine Project Office, and Space Shuttle Projects Officer Alex McCool also participated.

Through Friday, the U.S. Space & Rocket Center and the Marshall Center

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Photo by Emmett Given, NASA/Marshall Space Flight Center

Marshall Center Director Art Stephenson, left, helps students from the Netherlands with a launch demonstration during the opening ceremony for the Teachers of the Year visit to the U.S. Space & Rocket Center and the Marshall Center this week.

## Come one, come all to Marshall's Family Fun Day Aug. 25

**I**t's that time of year, again. Marshall civil servants, retirees and contractors and their families are invited to the Marshall Center's annual picnic — Family Fun Day — from 10 a.m.-3 p.m. Aug. 25 at the picnic pavilion. This year's Family Fun Day is sure to be the best ever with more games, more prizes and great food.

"We're taking a slightly different approach this year," said event chairwoman Angela Storey of the Customer and Employee Relations Directorate. "We've hired an outside company to come in to perform the bulk of the work. That way, we'll need fewer volunteers

and Marshall team members can enjoy the day."

Events include a kickoff children's parade. All children wanting to participate in the parade should be at the activities building — Bldg. 4752 — at 9:45 a.m. to receive balloons and goody bags. Winnie the Pooh and Scooby Doo costumed characters and Sparkles the Clown will all be participating in the parade that will start at the activities building and end at the Children's Stage. Parent participation is only necessary if a child is too young to parade on their own.

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# Central SHE Committee revitalizes VPP project



**T**he Marshall Center's Central Safety, Health and Environmental (SHE) Committee recently endorsed resumption of the project to obtain Star Certification in OSHA's Voluntary Protection Program (VPP).

Here are some important facts to remember:

- VPP certification is an outside-party validation of how successful our SHE Program is in protecting civil service and contract workers at Marshall.
- It is not a separate program that we are adding to our SHE Program. You don't have to learn a new set of safety rules, just follow the ones we already have in place. It is a process for obtaining OSHA endorsement of the excellence of the SHE Program developed and used by the people at Marshall.
- The Voluntary Protection Program provides public recognition for organizations that have developed and implemented a safety and health management program that functions to provide effective, equal protection of employees and contract workers.
- Eligible safety and health programs include systems and processes known to reduce the incidence and severity of workplace illnesses and injuries, and are successfully integrated into all daily operations.
- OSHA describes the VPP Star Program as "the most highly selective program, and is for applicants with occupational safety and health programs that are comprehensive and are successful in reducing workplace hazards."

## Safety Bowl 2001

**H**ere are this week's questions for the upcoming Safety Bowl. More questions are available on "Inside Marshall."

1. Giving blood can save lives and it's easy to do. What are the main requirements to give blood?
2. The American Red Cross National Fire Prevention Association suggests that families conduct a home fire drill at least how often?
  - A. Once a year
  - B. Twice a year
  - C. Three times a year
  - D. Every other year
3. If a tornado warning is issued for your area you should?
  - A. Open all windows and doors
  - B. Immediately go to a safe part of the building
  - C. Turn off the main breaker to your house
  - D. Put tape on all glass windows
4. Marshall's annual safety metrics are provided in the:
  - A. NASA Strategic Plan
  - B. Agency Performance Plan
  - C. Marshall's Implementation Plan
  - D. Marshall's Safety, Health and Environmental Program Document
5. According to OSHA, an employer must administer a continuing, effective hearing conservation program whenever employee noise exposures equal or exceed a time-weighted average of a certain decibel level. What is that db level?
6. If someone becomes exposed to a work-place chemical, how do you find out what to do?
7. Which of the following workplace illnesses or injuries results, on average, in the most days away from work?
  - A. Fractures
  - B. Amputations
  - C. Carpal tunnel syndrome
  - D. Insect bites
8. Fire exit drills are required annually for:
  - A. All facilities
  - B. All facilities in excess of 1,000 sq. ft.
  - C. All facilities with normal occupancy of 10 or more
9. On Marshall Center roads, the right-of-way should always be yielded to what?
10. Why should you wash fruit and vegetables before using?

*See Answers on page 8*



Photo by Emmett Given, NASA/Marshall Space Flight Center

## Helping out for the summer

Future Assets, Student Talent (FAST) program manager Margaret-Nell Parker, center, visits with students participating in the program. Seated from left are Samantha Keen, Jonathan Moore, Parker, Janie Richardson, and Ashley Adams. Standing from left are Rizwan Mahmood, Keely Chow, Kendra Hill, Candace Hill, Natalie Cowans and Joel Ruble.

## Family Fun

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### Fun and games for all

The Midway games are designed to be won. Sparkling booths house these colorful games that are age-specific from toddlers to adults. Players win at least a consolation prize every time they play.

For children, there will be face painting; Katie the Caterpillar — kids enjoy winding their way through this massive adventure; Moonwalk — a giant bubble of air for children 12 and under to bounce around in; spin art; and treasure hunt.

To cap off the fun-filled day, all can enjoy a giant slide — and for the teens and adults — a bungee run, misting tent and, of course, the ever-popular bingo. And, of course, there will be midway

games for all: bank shot; bull's eye; can smash; colors; cup and ball; fry fishing; lucky dice; milk jug

throw; Plinko; quack attack; ring toss; seven-eleven; tic-tac-toe; TKO; troll toss; duck pond; lollipop kite; bowl-'em; toss-'em; and basketball toss.

### Entertainment

On the children's stage will be Murphy the Magician and the Community Ballet. The main stage features the Latin Rhythms; jazz band, Abstract; and rock 'n' roll band, Gryphon. And there will be assorted exhibits to view.

### Good food

Meal tickets are \$6 each and are on sale through Aug. 17. Each ticket is for one of the following: barbecue pork plate; chicken plate; or a garden burger. Each meal includes baked beans, cole slaw, bread and condiments.

Purchase tickets through admin officers or at the Marshall Exchange in Bldg. 4752. For each tickets purchased you will receive one door-prize ticket. Retirees may purchase meal tickets from Bill Stafford — 544-0252 — in Bldg. 4752.

Other food available at the picnic includes hot dogs, soft drinks, ice cream, Hawaiian crushed ice, cotton candy, popcorn and sno cones.

### Souvenir T-shirts

Marshall Family Fun Day 2001 souvenir T-shirts can be ordered through Aug. 10 from the Marshall Exchange. T-shirt is made of 50/50 yellow cotton/poly and have the NASA insignia on the front and the Family Fun Day logo on the back. Cost is \$8 for a children's shirt; \$10 for adult sizes small to X-large; and \$11 for XXL and XXXL. Send payment in the form of a check made out to NASA Exchange — MSFC and send it to: CD10XX, ATTN: Candy Bailey, NASA Exchange Space Shop, Bldg. 4203, room 1202. Include quantity of each shirt ordered, total price, your name, address or office symbol, phone number and e-mail address. Payment may be made by VISA, MasterCard, Discover or American Express at the Exchange Space Shop.

For more information, visit the Web at: <http://picnic.msfc.nasa.gov>





# ProSEDS team working to make space tethers a reality

by Debra Valine

**S**ome day space tethers may provide a low-cost means for raising or lowering orbits of satellites — or propel spacecraft on long-range flights. Technology that will make space tethers a reality is under development at the Marshall Center.

For four years, the Marshall Center team and industry partners have been developing the Propulsive Small Expendable Deployer System experiment — called ProSEDS. Expected to fly in 2002, ProSEDS will test electrodynamic tether propulsion technology. Electrodynamic tethers are long, thin wires that collect electrical current when passing through a magnetic field. The tether works as a thruster as a magnetic field exerts a force on a current-carrying wire.

This tether design has never before been tried. The tethers were wound at a contractor facility in California, shipped to Marshall for testing, then returned to California for re-winding.

When it became critical for the ProSEDS project to have a more rapid turnaround time between tests, Marshall engineers Mark Vaccaro of the Engineering Directorate and Ken Welzyn of the Space Transportation Directorate joined forces to develop a test facility for ProSEDS. Through the combined resources of both directorates and the efforts of these two ProSEDS team members, the Tether Winding and Spark Testing (TWST) facility was developed in Bldg. 4705.

“We actually started developing the test facility in December of last year,” said Welzyn. “We saw some unexpected behavior from the tether in the test facility we had been using in Bldg.

4619. We discovered that some subtle manufacturing changes had a big impact on how the tether deployed.

“We needed to understand what was causing this, so we used some spare deployer parts and hand-wound and hand-deployed a short tether sample. Hand winding tethers was more difficult than we thought it would be,” Welzyn said. “Mark went out into the shop and came back with a piece of hardware that made the job easier. The TWST facility grew from there.”

“We are parting new waters, and there was a need to understand how the tether would behave during deployment, and also the nuances in manufacturing,” said project manager Leslie Curtis. “We had to get smarter on it. It was easier, cheaper and faster to do the testing in-house. It was not feasible for the manufacturer to do this additional work.”

The test equipment was not bought off-the-shelf, but developed at Marshall. Some 60 individual parts were built in-house. “We are saving time and developing in-house knowledge and expertise,” Curtis said. “It is important to give people opportunities to work hands-on. It gives us a better understanding of how things work.”

“We wanted to be able to wind or rewind tethers after deployment, but we also needed the capability to conduct spark tests,” Vaccaro said. Spark tests verify integrity of the tether electrical insulation properties. “We wanted to develop the facilities to have better control of that process and reduce the risk of damaging the tether during all the tests that we had to do,” he added.

“We tried to keep our operation as versatile as possible,”

Vaccaro said. “In addition to winding and spark testing tethers, we are working on developing new techniques that reduce the risks to the tethers.”

Vaccaro and Welzyn had been working on the project, but in different areas. Vaccaro works in the design review of mechanisms, which included deployable probes and the tether braking mechanism.

Welzyn is the project lead for tether dynamics and works on tether deployment test definition and data analysis.

The combined efforts and talents of the two engineers led to an in-house tether testing capability and an in-depth understanding of tether manufacturing. “We also provided support to manufacturing of the tethers. On smaller projects like ProSEDS, you sometimes find yourself doing a job you didn’t expect. Everyone pitches in and does what needs to be done,” Welzyn said.

*The writer, employed by ASRI, is the Marshall Star editor.*



Photo by Terry Leibold, NASA/Marshall Space Flight Center

**Mark Vaccaro, left, and Ken Welzyn show how electrodynamic tethers are tested in the new Tether Winding and Spark Testing Facility.**

# What is ProSEDS?

**T**he Propulsive Small Expendable Deployer System experiment — ProSEDS — will demonstrate the use of an electrodynamic tether — basically a long, thin wire — for propulsion.

An electrodynamic tether uses the same principles as electric motors in toys, appliances and computer disk drives, and generators in automobiles and power plants. When electrical current is flowing through the tether, a magnetic field is produced that “pushes” against the magnetic field of the Earth.

For ProSEDS, the current in the tether results by virtue of the voltage generated when the tether moves through the Earth’s magnetic field at more than 17,000 mph. This approach can produce drag thrust, and also generates useable power.

If a tethered spacecraft could supply power, the direction of the electrical current could be reversed, and re-boost thrust could be generated. The key to making it work is collecting current from the Earth’s ionosphere.

While tethers have been successfully tested in space, ProSEDS will use a radically different and more efficient scheme for collecting current. Most of the metallic tether will be exposed to the environment of space, instead of covered with an insulating sleeve as in previous electrodynamic tether missions. The bare tether, about as thin as dental floss, will collect electrons directly.

Electrodynamic tethers used for propulsion in low-Earth orbit and beyond could significantly reduce the weight of upper stages used to boost spacecraft to higher orbit. Much of the weight of any launch vehicle is the propellant, and it’s expensive to life heavy propellants off the ground. Since electrodynamic tethers require no propellant, they could substantially reduce the weight of the spacecraft and provide a cost-effective method of re-boosting spacecraft, and potentially, the International Space Station.

Current industry partners for the ProSEDS experiment include: Tether Applications Inc. of Chula Vista, Calif.; Electric Propulsion Laboratory of Monument, Colo.; Triton Systems Inc. of Chelmsford, Mass.; Smithsonian Astrophysical Observatory of Cambridge, Mass.; Alpha Technologies of Huntsville; the University of Michigan in Ann Arbor; and Cortland Cable in Cortland, N.Y.

## Looking for a good workout?

# Take a hike!

**H**iking is a great way to get a good cardiovascular workout and take in some great scenery at the same time. Trails range from easy to difficult and it is important not to try to do too much too soon. Consult trail guides and experts before taking on a trail for the first time. The following tips may make your hike enjoyable and worry-free.

- **Never hike alone.** Stay on the trail and obey all signs and warnings. Tell a friend/family member where you are going and when you will be returning.
- **Don’t start out too late in the day.** Most of us underestimate how long a hike will take. Climbing over rocks, around trees and up hills will slow you down. Allow 30 minutes for each mile, plus an extra 30 minutes for every 1,000 feet in elevation you will be covering.
- **Bring plenty of food and water.** You can easily become dehydrated on a hot day. Bring at least a quart of water on short hikes and two quarts of water on long hikes. Don’t drink any stream water. The water may be contaminated and you could be at risk.
- **Do not hike in narrow canyons or gulches when it looks like rain.** Flash floods have killed hikers. If you are hiking in a narrow canyon or gulch, and it starts to rain, turn back immediately. If a stream begins to rise before you can leave the canyon, go to higher ground and wait. Do not try to cross or out-race a swiftly flowing stream.
- **Wear appropriate clothing.** Bring a rain jacket and a sweater on long ridge hikes. It can get very windy, cold and wet atop a mountain ridge. Staying warm will help prevent hypothermia. Don’t forget your mini first-aid kit. Good hiking boots will help support your ankles. If you are going on a long hike with wooded sections overgrown along the way, long pants and gloves will help you avoid cuts and scratches.

## Job Opportunities

**CPP-01-058-CL, Supervisory, AST, Aerospace Flight Systems, GS-861-15,** Flight Projects Directorate, Flight Systems Department, Pressurized Carriers Group. Closes Aug. 6.

**CPP-01-063-GF, AST, Technical Management, GS-801-13/14,** Science Directorate, Space Product Development Group, Microgravity Research Program Office. Closes Aug. 6.

**CPP-01-1067-CP, AST, Technical Management, GS-801-14,** Space Shuttle Projects Office, External Tank Project Office. Closes Aug. 6.

**CPP-01-064-JB, AST, Aerospace Flight Systems, GS-861-15,** Space Transportation Directorate, Second Generation RLV Program Office. Closes Aug. 7.

**CPP-01-065-JB, AST, Aerospace Flight Systems, GS-861-14,** Space Transportation Directorate, Second Generation RLV Program. Closes Aug. 7.

**CPP-01-066-GF, Contract Specialist, GS-1102-14,** Procurement Office. Closes Aug. 10.

**CPP-01-062-JB, Management Analyst (PIP Position), GS-343-07,** Space Transportation Directorate, Second Generation RLV Program Office. Closes Aug. 13.

**Reassignment Bulletin 01-011-JB, AST, Liquid Propulsion Systems, GS-861-13 (2 vacancies),** Space Transportation Directorate, Vehicles and Systems Development Department, Engine Systems Engineering Group. Closes Aug. 10.

**Reassignment Bulletin 01-012-KP, Program Analyst, GS-343-11/12,** Science Directorate, Business Management Office. Closes Aug. 13.



# Teachers

*Continued from page 1*

are hosting the nation's Teachers of the Year and providing them with a unique educational experience. Participating this year are 51 U.S. teachers — including National Teacher of the Year Michele Forman of Vermont — and 22 educators from other countries.

While attending Space Camp, educators are participating in simulated Space Shuttle and International Space Station missions, training on a variety of astronaut simulators and attending workshops to learn innovative hands-on techniques for teaching students about NASA's space program.

Educators also are attending a series of lectures and labs provided by the University of Alabama in Huntsville, meeting members of the local aerospace community and touring Marshall — NASA's lead center for space transportation and manager of all of the propulsion elements that carry the Space Shuttle from launch to orbit. In addition to exploring new rocket technology, Marshall also manages the science experiments conducted on the Space Station.

"One of NASA's primary goals is to spark the imaginations of our young people and inspire them toward math, science and engineering careers," said Art Stephenson, director of the Marshall Center. "Supporting excellence in education through the Teacher of the Year program is an effective way of accomplishing that goal."

NASA is a long-time supporter of the U.S. Space Camp programs.

"We are very excited that NASA is once again demonstrating its ongoing commitment to excellence in education," said Larry Capps, the chief executive officer of the Space & Rocket Center. "Educators are some of the world's best ambassadors for the space program and their participation here will carry over to classrooms around the world."



Photo by Robert Fedusenko, U.S. Space & Rocket Center

Panelists included first row from left, Konrad Dannenberg, Dr. Ernst Stuhlinger, and Dr. Gerhard Reisig. Standing from left are Werner Dahm, George Hopson and Alex McCool.

The Space & Rocket Center began International Space Camp in 1990, realizing that human space travel of the future would not be a sole U.S. effort, but rather an international undertaking. By including the U.S. Teachers of the Year in the program, the expertise and voices of exemplary teachers across the nation create informed advocates of space science and exploration.

Teachers of the Year are selected by each state's department of education after reviewing nominations from local school systems. The Teachers of the Year program dates back to 1953 and is the oldest and most prestigious awards program to focus public attention on educator excellence.

*The writer, employed by ASRI, supports the Media Relations Department.*

## Teachers of the Year

Tonya Perry, Pelham, Ala.  
Patricia Truman, Anchorage, Alaska  
John Mulcahy, Peoria, Ariz.  
Marian Haney, Jonesboro, Ark.  
Joan Kniss, Brighton, Colo.  
Karen Rezendes, Danbury, Conn.  
Robert Adams, Wyoming, Del.  
Millie Harris, Dept. of Defense Ed., Columbus, Ga.  
Mary Penn-Beveney, Washington, D.C.  
Joseph Balchunas, Fort Lauderdale, Fla.  
Mary Wilson Eager, Dahlonga, Ga.  
Beverly San Agustin, Dededo, Guam  
Derek Minakami, Honolulu, Hawaii  
Eileen Thornburgh, Boise, Idaho  
Mary Jo Ann Crow, Metamora, Ill.  
Kurran Strunk, South Bend, Ind.  
Gail Wortmann, Bloomfield, Iowa  
Janet Lewandowski, Wichita, Kan.  
Harriet Biehle, Russell, Ky.  
Barbara Forshag, Luling, La.  
Elaine Hendrickson, Presque Isle, Maine  
Linda Storey, Ellicott City, Md.  
Marianne Moran, Methuen, Mass.  
Joan Garretson, South Lyon, Mich.  
Katherine Koch-Laveen, Eagan, Minn.  
Valerie Maxwell, Hazelwood, Mo.  
Roberta Zeal, Whitefish, Mont.  
Mary Jane Caffey, Valley, Neb.  
Valdine McLean, Lovelock, Nev.  
Stacy Stapleton, Antrim, N.H.  
Barbara LaSaracina, Warren, N.J.  
Robin Schamberg, New City, N.Y.  
Laura Bilbro-Berry, Washington, N.C.  
Virginia Deitz, Buffalo, N.D.  
Anna Cabrera Baer, Saipan, Northern Mariana Islands  
Douglas Cooper, Wilmington, Ohio  
Talita DeNegri, Oklahoma, City, Okla.  
Norma Barger, Ukiah, Ore.  
Nicholas Uliano, King of Prussia, Pa.  
Kathryn Tancrelle, Smithfield, R.I.  
Christa Compton, Columbia, S.C.  
Marilyn Herz, Rapid City, S.D.  
Paula Lowery, McDonald, Tenn.  
Linda DeMino, San Antonio, Texas  
Norman Lister, Washington, Utah  
Michele Forman, Salisbury, Vt.  
Cari Vickey, Montclair, Va.  
Katie Henderson, Renton, Wash.  
Donna Ream, Lewisburg, W. Va.  
Tomas Klubertanz, Milwaukee, Wisc.  
Cindy Gulisano, Torrington, Wyo.

## Center Announcements

### Washington Update

The next Washington Update luncheon featuring U.S. Rep. Bud Cramer will be held Aug. 14 at noon at the Von Braun Center North Hall. Tickets are \$25. To make a reservation, take a check made payable to the Huntsville/Madison County Chamber of Commerce to Rosa Kilpatrick in Bldg. 4200, room 828, no later than Friday.

### Small business opportunities

The Marshall Center's Technology Transfer Department is sponsoring a Minority- and Women-Owned-Business Industry Briefing at the Oakwood College Technology Complex from 8 a.m.-4 p.m. on Aug. 14. Small businesses will learn of opportunities in both government and area industry. Call Carolyn McMillan at 544-9151 for more information.

### Online career resources

The NASA Headquarters Office of Human Resources and Education has purchased a NASA-wide subscription to Science magazine's Next Wave product that is now available to employees at the Marshall Center. Next Wave, a weekly on-line publication devoted to scientific training and career development, provides global news, profiles of emerging careers, and advice from experts and role models drawn from the international scientific community. Next Wave is located at: <http://nextwave.sciencemag.org/>

### NASA helping children

HED — hypohidrotic ectodermal dysplasia — is a medical disorder characterized by the lack of sweat glands. Children suffering from HED, Sun and Light Reaction Syndrome, XP and related disorders cannot tolerate heat because their bodies cannot cool themselves. NASA developed cool suits — based on spacesuit technology — keep body temperatures in a tolerable range. The HED Foundation provides these cool suits to children who need them. For more information, call Sarah Ann Moody at

(757) 826-0065 or (757) 826-2420 or send an e-mail to: [MODLADY@prodigy.net](mailto:MODLADY@prodigy.net). The Web site address for the HED Foundation is: [www.hedfoundation.org](http://www.hedfoundation.org)

### Upcoming Classes

#### Russian culture class

The Russian Culture for Communication course has been rescheduled to Aug. 27-31, from 8 a.m.-noon daily at the University of Alabama in Huntsville, Wilson Hall, room 118. Anyone who interacts with Russians will benefit from attending this course. Civil servants may enroll via AdminSTAR, or send an email to: [Laura.Groce@msfc.nasa.gov](mailto:Laura.Groce@msfc.nasa.gov). Deadline for registration is Aug. 17.

### Clubs and Meetings

#### Association scholarships

The Marshall Association is accepting applications for college/university scholarships through Aug. 24. Two scholarships — one technical, one non-technical — will be awarded to incoming freshmen in September 2001. For more information, call Efre Hanson at 544-6340.

#### Propellantless Propulsion talk

Jeffrey A. Cameron, physicist and inventor, will discuss "Propellantless Propulsion: Putting Electromagnetism to Work Against Gravity" from 7-8:30 p.m. Thursday at the Huntsville-Madison County Public Library auditorium at 915 Monroe St. in Huntsville. The event is open to the public and admission is free. For more information, call Ronnie Lajoie at 461-5934 or 721-1083.

#### Toastmasters International

NASA Lunar Nooners Toastmasters Club meets every Tuesday for lunch at 11:30 a.m. in the Bldg. 4610 cafeteria conference room. Toastmasters can help improve your communication skills, lose the fear of public speaking, and be a better listener. For more information, call Leslie

Diggins at 544-0049 or visit the Web at: <http://www.toastmasters.org/>.

### Lunch-time prayer

Join the lunch-time prayer and fellowship from noon-12:30 p.m. every Tuesday and Thursday in Bldg. 4200, room 432, or send prayer requests. For more information, send an e-mail to or call Johnnie Wilson at 544-1007.

### Instrumentation Division meets

The Measuring Branch, Telemetry Branch and Radio Frequency Branch meets the first Tuesday of each month at 11 a.m. at the Redstone Golf Club Coffee Shop. For more information, call Tom Escue at (256) 232-1549.

### Miscellaneous

#### Luau Dinner Dance

The MARS Ballroom Dance Club is holding a luau dinner dance from 6:30-11 p.m. Aug. 11 in the Von Braun Center East Hall. Music is by the Night Owls and Tina Swindell. Tickets for the Hawaiian casual event — at \$18 each — can be purchased through Aug. 7 from club members Linda Kinney at 544-0563; Bob Williams at 544-3998; Hugo Berry at 544-3525; Pat Sage at 544-5427; Tamara Landers at 544-6818; Palmer Herndon at 534-7408; Joyce Davis at 880-2270; or Ed Ogozalek at 837-1486. Club members receive a \$3 discount. To join, ask ticket sellers for an application.

#### Discount chorus tickets

Discount tickets are available to Marshall team members for the musical "Oliver" presented by the Huntsville Community Chorus Aug. 2-4 at 7:30 p.m., and Aug. 4-5 at 2 p.m. at the Von Braun Center Playhouse. To receive a 10 percent discount, NASA employees, retirees and contractors must show their badge at the Huntsville Community Chorus Association office located at 3312 Long Ave. in Huntsville. For more information, call 533-6606.

## Employee Ads

## Miscellaneous

- ★ Antique chest of drawers w/mirror, \$250; twin bed w/white headboard, \$100; exercise bike, \$50; color TV, \$50. 859-3136
- ★ 1999 Yamaha Virago Motorcycle 1100cc, 11K miles, \$5,000. 837-9420
- ★ AMD K-6 233 MegaHz computer w/CD rom, 3.5 floppy, 4 Gig hard drive, \$200; flat screen monitor, 15", \$75. 325-3304
- ★ Mount Vernon reproduction tea table, mahogany, \$950. 882-1097
- ★ Flute by Gemeinhardt, one key sticks, as is, \$250. 256-771-0061
- ★ Craftsman garden tractor, 12HP, \$300. 880-9487
- ★ Toshiba Satellite laptop computer, 4GB HD, 64RAM, Win98, 56K modem, carrying case, \$600 obo. 772-9925
- ★ Conn alto saxophone w/hard case, no flaking finish, no dents in sax/case, \$400 obo. 653-3625
- ★ Cellular phone for Sprint PCS, Samsung 3500, leather case, \$75 firm. 881-8009
- ★ Warren and Sweat ladder-type deer stand, 12', \$75. 325-6000
- ★ Two Michelin tires, P195/75/R14, \$40. 830-0854
- ★ Air conditioners: Packaged units; 3.5T Trane, \$350; 3T York, \$300; window unit, 5,000 BTU, \$100. 881-6040
- ★ 1976 Alacraft, 15' runabout w/trailer, 50HP Mercury motor, boathouse kept, \$1,500 obo. (256) 582-5210
- ★ Sofa and loveseat, cream color, \$300 obo. 721-6392
- ★ Ping I3 3-wood, steel shaft, \$125; TaylorMade Bubble Burner driver, 9.5 degrees, \$35. 828-6247
- ★ Computer desk, \$100. 881-9084
- ★ Panasonic cordless phone/answering machine, \$25. 851-8491
- ★ Armour 845 irons, 3-pw, shortened 2" for Junior, 2 yrs. old, \$200. 230-0762
- ★ Palm Vx handheld, new, never used, \$250 obo. 852-2852 after 6 p.m.
- ★ Brunswick pool table, 1 yr. old, paragon oak w/ cherry finish, navy blue felt, 1" slate, drop-leather pockets, \$2,000. 509-3392
- ★ Big screen television, Mitsubishi, 42", \$450; large Kenmore microwave oven, 1400 watt, \$50. 353-0370 after 5 p.m.
- ★ Checkmate ski boat, 17', cherry red hull/white interior, 140HP Evinrude. \$6,500. 830-5783
- ★ Late 70s Caravelle cuddy cabin, 22', 188HP Mercruiser, dry-stored, Bimini top, swim

- platform, safety equipment, \$1,900. 881-8214
- ★ Chromecraft dinette table w/leaf and four naugahyde chairs, \$89. 881-9421
- ★ 1993 Harley Davidson Sportster XLH 883, 14.4K miles, many extras, \$6,500. 882-9053
- ★ Ethan Allen "Country French" entertainment armoire, maple w/Bordeaux finish, pocket doors, storage drawers, \$1,250. 233-5819
- ★ Sleeper sofa and matching chair, \$200 obo; hunter green sofa, \$100; computer desk, \$50; and more. 430-0470
- ★ Computers with 17-inch monitors, 2Gig HD, 32MB Ram, Windows. 882-1779

## Vehicles

- ★ 1995 Chrysler Concorde, 76K miles, silver, \$6,250. 464-6524
- ★ 1983 CJ-7 Jeep, 6-cylinder, 4-speed, adult driven, \$2,900. 232-3059
- ★ 1999 Isuzu Amigo hardtop, 5-speed, 17K miles, new tires, removable sunroofs, one-owner, non-smoker, \$14,000 obo. 837-8921
- ★ 1993 Dodge Grand Caravan SE, one-owner, many new parts, service records available, \$4,700 obo. 895-9520
- ★ 1998 Mercury Grand Marquis LS, red w/white leather, V-8, ultimate package. 536-8244
- ★ 1998 Chevy Silverado pickup, extended cab, V-8, 3rd door, alloy wheels, 32K miles, \$16,750. 881-0791
- ★ 1994 Chevy Tahoe, 6-cylinder, 4x4, white w/gray cloth upholstery, ps/pb/pl, a/c, am/fm stereo cassette/radio, 110K miles. 881-7967
- ★ 1997 Ford Expedition, auto, 4-door, V-6, 105K miles, light green, power windows/locks, CD changer, \$17,000 obo. 828-6913
- ★ 1998 Nissan Frontier, 4x4, 45K miles, manual, new tires, alloy wheels, \$10,500 obo. 931-438-7947/256-920-4222
- ★ 1997 Camaro, V-6, 4-speed, T-tops, CD player, 52K miles, \$10,500. 256-729-0101
- ★ 1991 Lincoln Continental Signature Series, \$1,500; 1987 Dodge Caravan LE, V-6, \$1000. 883-2869
- ★ 1991 Toyota Corolla, auto, air, am/fm/cassette, \$3,400 obo. 539-9491
- ★ 1992 Dodge Caravan, 97.5K miles, a/c, pdl, cassette, new tires, \$3,490 obo. 461-8182
- ★ 1994 Mazda 929, V-6, power sunroof, ivory w/taupe leather, garage kept, 68K miles, \$9,900. 880-0199
- ★ 1984 GMC 3/4-ton, 350 V-8, 4x4 long-bed, 1-tanks, a/c, one-owner, \$4,850. 881-3661
- ★ 1999 Jeep Wrangler, red, 5-speed, 4.0L, air, 8K

miles, \$17,500. 489-0160/508-8117

- ★ 1993 Plymouth Grand Voyager, power steering/brakes, a/c, built-in child seats. \$3,900. 778-9149
- ★ 1996 Mazda Miata, tan leather, Montego Blue, 26K miles, power windows, CD, 5-speed. \$11,000. 533-3107

## Free

- ★ Five large concrete drain pipes, approx. 4' diameter, 5' long, you haul. 534-8186
- ★ Lab/terrier mix puppies, six weeks old, free to good home, great w/children. 883-7089
- ★ German Shepherd mix, 8 months old, female, good home & TLC. 971-2773

## Wanted

- ★ Outboard motor for small fishing boat, 5-10HP. 883-6416
- ★ Foosball table. 489-0106/883-7729
- ★ Barbell for free weights. 883-5396

## Found

- ★ Money. Call 544-4758 to identify
- ★ Plastic sheeting. Call 544-4758 to identify

## Answers

## Continued from page 2

1. Must be 17 years of age, weigh at least 110 pounds, and be in good health
2. B. Twice a year
3. B. Immediately go to a safe part of the building.
4. C. Marshall Implementation Plan
5. 85 db
6. Check the Manufacturer's Safety Data Sheet for first-aid information
7. C. Carpal tunnel syndrome
8. All facilities with normal occupancy of 10 or more
9. Pedestrians
10. To remove any residual pesticides or microorganisms (acceptable: fertilizers, germs, microbes)

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